REMARKS

This SUPPLEMENTAL AMENDMENT is filed as a supplement to the Amendment filed on July 12, 2001.

Claims 1-2, 4-33 are in the case.

Claim 3 was cancelled without prejudice in order to clarify the status of claiom 3.

Claims were amended to correct typographical errors and to better claim the invention.

Claims 32, 33 were added to better claim the invention.

All independent claims are believed to be in condition for allowance.

All dependent claims are believed to be dependent from allowable independent claims, and therefore in condition for allowance.

Favorable action is respectfully solicited.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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MARK-UP PAGES FOR THE AUGUST 27, 2001, AMENDMENT
TO U.S. PATENT APPLICATION SER. NO. 08/740,637

The replacement for the FIRST full paragraph of page PAGE resulted from the following changes:

COPY PARAGRAPH TO BE AMENDED HERE.

The replacement for claim CLAIM resulted from the following changes:

COPY CLAIM TO BE AMENDED HERE.

14. (Amended) A method for estimating a length of tape on a reel [one or more reels], comprising:

      measuring a first angular position of a tape supply reel;

      measuring a second angular position of a tape take-up reel;

      measuring a third angular position of a capstan engaging the tape [at a tape path length from a respective reel]; and,

      estimating said length of tape by a processor employing a Kalman filter, said Kalman filter responsive to at least one of said first angular position of said tape supply reel, said second angular position of said tape take-up reel, and said third angular position of said capstan.

15. (Amended) A method for estimating a length of tape on one or more reels, comprising:

      measuring a first angular position of a tape supply reel;

      measuring a second angular position of a tape take-up reel;

      measuring a third angular position of a capstan engaging the tape;

    [The method of claim 14 further comprising:]

      measuring a fourth angular position of a tape tension arm; [and]

selecting either said tape supply reel or said take-up reel as a selected reel; and,

estimating said length of [how much] tape [is on a selected tape reel] by a processor employing a Kalman filter, said Kalman filter responsive to said angular position of said [the] selected reel, said third angular position of said capstan, and said fourth angular position of said tape tension arm.

20. (Amended) A system for measuring how much tape is on a reel from and to which tape is unwound and wound respectively during the rotation of the reel as the tape is moved along a tape path, comprising:

a cylindrical member engaging the tape at a position along the tape path that establishes a tape path length from the reel, said cylindrical member engaging said tape for rotation with the tape as the tape is moved along the tape path;

a first angular position transducer for measuring a first angular position of said reel as the tape is [IS] moved along the tape path;

a second angular position transducer for measuring a second angular position of the cylindrical member as the tape is moved along the tape path; and
a processor including a Kalman filter responsive to the first and second angular positions measured by the first and second angular position transducers for calculating how much tape is on said reel.

27. (Amended) The method of claim 25 further comprising:

g. choosing [Choosing] a variable to be measured;

h. selecting a minimum and maximum acceptable measurement value of said variable;

i. selecting a maximum acceptable variance of said variable;

j. recording an individual measurement;

k. determining if said individual measurement's variance is greater than said maximum acceptable variance;

l. determining if a three sigma-interval around said individual measurement is not at least partially included within an interval from said minimum to said maximum acceptable measurement values;

g. if the determinations in steps e OR f [d OR e] prove true, ignoring the individual measurement and basing the current Kalman filter estimate on other measurements and on previous Kalman filter estimates.

28. (Amended)   A method for improving a Kalman filter estimate in a series of estimates by ignoring selected measurement values, comprising the steps of:

    a. choosing [Choosing] a variable to be measured;

    b. selecting a minimum and maximum acceptable measurement value of said variable;

    c. selecting a maximum acceptable variance of said variable;

    d. recording an individual measurement;

    e. determining if said individual measurement's variance is greater than said maximum acceptable variance;

    f. determining if a three sigma-interval around said individual measurement is not at least partially included within an interval from said minimum to said maximum acceptable measurement values;

if the determinations in steps e OR f prove true, ignoring the individual measurement and basing the current Kalman filter estimate on other measurements and on previous Kalman filter estimates.